

Serial No. 10/585,986
Docket No. SH-0062PCTUS
RYU.026

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LISTING OF THE CLAIMS:

The Claims are listed as follows with no claim amendments:

1. (Previously Presented) A method of elongating optical fiber base material comprising:
 - heating and softening a base material ingot in a heating means;
 - drawing said ingot with a pair of pinch rollers; and
 - elongating the ingot to make base material rod including a smaller diameter than said ingot,
 - wherein a roller groove of said pinch rollers includes one of a curvature radius which is greater than the outer diameter of said base material rod and a V-shaped roller groove with a cross section including straight lines formed on each surface of said pinch rollers comprised of metal,
 - wherein the facing roller grooves respectively formed on the surfaces of a pair of said pinch rollers nip and draw said base material rod, and
 - wherein a position of the pinch rollers is adjusted such that the straight lines, connecting a central axis of the heating means with a groove center of the roller grooves respectively formed on each surface of the pair of pinch rollers, are parallel to a traveling direction of the base material ingot fed into the heating means.

2. (Withdrawn) A method of elongating optical fiber base material comprising:
 - heating and softening base material ingot in a heating means;
 - drawing said base material ingot with a pair of pinch rollers; and
 - elongating the base material ingot to make base material rod including a smaller

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diameter than said base material ingot,

wherein using an untapered shaft including a reference edge face which is parallel to the elongating direction, said pinch rollers are pushed against the reference edge face to be fitted and fixed to the untapered shaft, and

wherein a position of the groove center of facing roller grooves respectively formed on the surfaces of said pair of pinch rollers is adjusted with a positioning adjustment apparatus which supports said pinch rollers,

wherein a position of the pinch rollers is adjusted such that straight lines, connecting a central axis of the heating means with a groove center of the roller grooves respectively formed on each surface of the pair of pinch rollers, are parallel to a traveling direction of the base material ingot fed into the heating means.

3. (Previously Presented) The method of elongating optical fiber base material according to claim 1, wherein a shorter rod including substantially the same outer diameter as the desired base material rod is nipped and held by a pair of pinch rollers, and

wherein a positioning adjustment apparatus supporting said pinch rollers adjusts the position of the apparatus using one of a vertical line of laser beam and a plumb bob, which is parallel to the traveling direction of the base material ingot, runs through the middle of the heating means and the center point of the shorter rod, to determine the positions of said pinch rollers.

4. (Previously Presented) The method of elongating optical fiber base material according

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to claim 1, wherein a jig comprising an upper board and a cylindrical part is mounted on a pair of pinch rollers, and

a positioning adjustment apparatus supporting said pinch rollers adjusts a position of the apparatus using a vertical line of laser beam or a plumb bob, which is parallel to the traveling direction of the base material ingot, runs through the middle of the heating means and the center point of the shorter rod, to determine the positions of said pinch rollers.

5. (Previously Presented) An apparatus for elongating optical fiber base material, comprising:

a heating means which heats and softens a base material ingot;
a pair of pinch rollers which draws, and elongates the base material ingot to make a base material rod including a smaller diameter than the base material ingot, said pair of pinch rollers comprised of metal, and respectively include either one of a roller groove including a curvature radius greater than the outer diameter of said base material rod and a V-shaped roller groove comprising a cross section including straight lines on the surfaces of said pinch rollers,

wherein a position of the pinch rollers is adjusted such that the straight lines, connecting a central axis of the heating means with a groove center of the roller grooves respectively formed on each surface of the pair of pinch rollers, are parallel to a traveling direction of the base material ingot fed into the heating means.

6. (Withdrawn) An apparatus for elongating optical fiber base material by heating and softening base material ingot in a heating means, comprising:

a pair of pinch rollers drawing and elongating to make base material rod including a

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smaller diameter than the base material ingot,

wherein:

an untapered shaft which holds said pinch rollers in the way said pinch rollers are rotatable, and includes a reference edge face being parallel to the elongating direction and used for positioning said pinch rollers,

positioning table adjusting the position of said untapered shaft, and

wherein a position of the pinch rollers is adjusted such that the straight lines, connecting a central axis of the heating means with a groove center of the roller grooves respectively formed on each surface of the pair of pinch rollers, are parallel to a traveling direction of the base material ingot fed into the heating means.

7. (Previously Presented) The apparatus for elongating optical fiber base material according to claim 5, wherein the surfaces of said pinch rollers are winded and fixed woven fabric comprising of heat-resistant material to prevent said pinch rollers from directly contacting to base material rod comprising of metal.

8. (Withdrawn) The method of elongating optical fiber base material according to claim 2, wherein a shorter rod including substantially the same outer diameter as the desired base material rod is nipped and held by a pair of pinch rollers, and wherein a positioning adjustment apparatus supporting said pinch rollers is adjusted with a position of the apparatus using one of a vertical line of laser beam and a plumb bob, which is parallel to the traveling direction of the base material ingot, runs through heating means and the center point of the shorter rod, to determine the positions of said pinch rollers.

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9. (Withdrawn) The method of elongating optical fiber base material according to claim 2, wherein a jig comprising an upper board and a cylindrical part is mounted on a pair of pinch rollers, and a positioning adjustment apparatus supporting said pinch rollers is adjusted a position of the apparatus using one of a vertical line of laser beam and a plumb bob, which is parallel to the traveling direction of the base material ingot, runs through the heating means and the center point of the shorter rod, to determine the positions of said pinch rollers.

10. (Withdrawn) The method of elongating optical fiber base material according to claim 3, wherein a jig comprising an upper board and a cylindrical part is mounted on a pair of pinch rollers, and a positioning adjustment apparatus supporting said pinch rollers adjusts a position of the apparatus using one of a vertical line of laser beam and a plumb bob, which is parallel to the traveling direction of the base material ingot, runs through the middle of the heating means and the center point of the shorter rod, to determine the positions of said pinch rollers.

11. (Withdrawn) The apparatus for elongating optical fiber base material according to claim 6, wherein the surfaces of said pinch rollers are winded and fixed woven fabric comprised of heat-resistant material to prevent said pinch rollers from directly contacting to base material rod comprised of metal.

12. (Previously Presented) The method of claim 1, wherein a surface of said pinch rollers include concave grooves for stably nipping the base material rod mounted on a position adjustment table via a mechanical reference level included in an untapered shaft, and woven

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fabric comprising of a heat-resistant material is wound and fixed around the surface of the pinch rollers.

13. (Previously Presented) The apparatus of claim 5, wherein a surface of said pinch rollers include concave grooves for stably nipping the base material rod mounted on a position adjustment table via a mechanical reference level included in an untapered shaft, and woven fabric comprised of a heat-resistant material is wound and fixed around the surface of the pinch rollers.

14. (Previously Presented) The method of claim 1, wherein the pinch rollers adjust position such that a straight line connecting a central axis of the heating means with the groove center of the roller grooves respectively formed on the surfaces of the pair of pinch rollers is parallel to the traveling direction of the base material ingot.

15. (Previously Presented) The apparatus of claim 5, wherein the pinch rollers adjust position such that a straight line connecting a central axis of the heating means with the groove center of the roller grooves respectively formed on the surfaces of the pair of pinch rollers is parallel to the traveling direction of the base material ingot.

16. (Previously Presented) The method of claim 5, wherein the pinch rollers are jointed with an untapered shaft including a reference edge face, pressed and fixed against the reference edge face of the untapered shaft, rotated and driven by a drive unit via the untapered shaft, the pair of the pinch rollers respectively including a concave roller groove on the facing surfaces

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of the pair of the pinch rollers.

17. (Previously Presented) The apparatus of claim 5, wherein the surfaces of the roller grooves are with heat-resistant fabric wound and fixed by mechanical means around the surfaces of the rollers with no direct contact with the base material rod by the pinch rollers.

18. (Previously Presented) The method of claim 1, wherein the roller groove of said pinch rollers includes both the curvature radius which is larger than the outer diameter of said base material rod, and a V-shaped roller groove with a cross section including straight lines is formed on each surface of said pinch rollers comprised of metal, and wherein the facing roller grooves respectively formed on the surfaces of a pair of said pinch rollers nip and draw said base material rod.

19. (Previously Presented) The apparatus of claim 5, wherein the roller groove of said pinch rollers includes the curvature radius which is larger than the outer diameter of said base material rod.

20. (Previously Presented) The apparatus of claim 5, wherein the roller groove of said pinch rollers includes the V-shaped roller groove with a cross section including straight lines formed on each surface of said pinch rollers comprised of metal, and wherein the facing roller grooves respectively formed on the surfaces of a pair of said pinch rollers nip and draw said base material rod.